REMARKS

Claims 1-42 and 48-60 are pending. Claims 1, 28, 31-35, 37, 48, 56-57, and 59 have been amended for clarity.

Claims 1-3, 5, 7-9, 11, 12, 19-22, 28-34, 48-49, 51-52, and 56-60 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over JP 09-054828 in the name of Mine et al.[1] in view of JP 08-272980 in the name of Tsukasaki[2]. Applicant respectfully requests reconsideration of this rejection.

Claim 1 recites an image processing apparatus comprising, *inter alia*, "line segment formation means for producing line segment image data representing a line segment which comprises a plurality of pixels for each of the plurality of processing units, the line segment formation means including means for setting a line segment length L, the line segment formation means being arranged and configured to form line segments having said length L, and a direction corresponding to the direction of each level gradient which is calculated by said gradient calculation means," and "line segment image storage means for storing the line segment image data produced by said line segment formation means."

Mine et al. discloses an image processing system which analyzes similarities between a model image and an "inputted" image. *Vectors* are generated to compare edges of the model image with edges of the subject images. Mine et al. does not teach or suggest "line segment formation means for producing line segment image data representing a line segment which comprises a plurality of pixels for each of the plurality of processing units." Instead, the edge-direction unit 16 of Mine et al. sets and stores gradient vectors that are normal to the edges of the model image and the subject image. A difference between the two directions is calculated. The edge magnitude unit 17 "calculates" and stores "edge magnitudes" of the model image. The difference is obtained at each pixel between the

[1] Applicant notes that U.S. Pat. No. 6,154,566 to Mine et al. corresponds to JP 09-054828 in the name of Mine et al.

[2] Applicant notes that Tsukasaki document is published only in the Japanese language. Only an English-language abstract is available. The Office Action makes reference to specific paragraphs in Tsukasaki, which

directions of the model image and the subject image vector data according. The differences are compared based on the edge magnitude calculated for the model image. See, *inter alia*, col. 6, lines 2-41. The Mine et al. system produces a "similarity" value, also referred to the "normalized mutual correlation." If the model image and the inputted image are sufficiently similar, based on a pre-determined threshold, a mark or a character in the inputted image is considered to have been "recognized." Both images are input to the Mine et al. system, and the result is a similarity value. Mine et al. contains no disclosure related to producing an image: The two images (the model image in particular) already are known prior to comparison.

More specifically, Mine et al. does not teach or suggest an image processing apparatus having "line segment formation means for producing line segment image data representing a line segment which comprises a plurality of pixels for each of the plurality of processing units, the line segment formation means including means for *setting* a line segment length L, the line segment formation means being arranged and configured to form line segments having said length L, and a direction corresponding to the direction of each level gradient which is calculated by said gradient calculation means." Mine et al. performs essentially an opposite operation, and does the operation with a vector, by *calculating a vector magnitude.* Mine et al. does not teach or suggest "setting a line segment length L."

Consequently, and moreover, Mine et al. also does not teach or suggest an image processing apparatus having "line segment image storage means for storing the line segment image data produced by said line segment formation means." Mine et al. can not store "line segment image data" that it does not produce, and therefore Mine et al. would have no reason to provide "line segment image storage means."

Applicant notes further that Mine et al. calculates the vector magnitude for only the model image. The vector magnitude is used as a "weighting value" for an evaluating

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suggests availability of an English-language translation. Applicant respectfully requests a copy from the Patent Office of any such English-language translation.

function. See, *inter alia*, col. 6, lines 42-64. The Office Action apparently considers calculating the vector magnitude in Mine et al. equivalent to "*setting* a line segment length L, the line segment formation means being arranged and configured to form line segments having said length L." Applicant respectfully urges, however, the calculating the magnitude of a vector and "setting a line segment length L" are, by definition, not equivalent. Moreover, Mine et al. discloses that the vector magnitude is calculated only for the *model* image. Since the model image is a clearly-made, already "known" image, there is no suggestion in Mine et al. to have "line segment formation means for producing line segment image data representing a line segment which comprises a plurality of pixels for each of the plurality of processing units, the line segment formation means including means for *setting* a line segment length L, the line segment formation means being arranged and configured to form line segments having said length L."

Calculating a vector magnitude also is not equivalent to "setting a line segment length L" because "setting" a vector magnitude/line segment length would be contrary to the fundamental purpose of Mine et al. More specifically, Mine et al. compares the model image and with the "inputted" image. "Setting a line segment length L" or a vector magnitude for the model image would serve no useful purpose in Mine et al. Calculation of the vector magnitude in Mine et al. is used as a "weighting value" in evaluating similarities between the model and the inputted images. Using a *set* weighting value in Mine et al. would not produce the desired results of a similarity value.

Tsukasaki does not cure the deficiencies of Mine et al. Tsukasaki has been cited as providing "setting a line segment of length 'L,'" which the Office Action admits is not disclosed "explicitly" in Mine et al. Applicant respectfully submit that Mine et al. also does not implicitly disclose "setting a line segment of length 'L.'" Further, it is unclear to Applicant how Tsukasaki can disclose "setting a line segment of length 'L'" when the English-language abstract indicates only that an extraction part 30 extracts a single pixel. In any event, since Tsukasaki appears to teach extraction of only a single pixel, the feature of "line segment formation means for producing line segment image data representing a

line segment which comprises a plurality of pixels for each of the plurality of processing units," which is missing from Mine et al. as urged above, also apparently is not disclosed in Tsukasaki.

The Office Action's proposed combination of Tsukasaki with Mine et al. appears to be an improper attempt at hindsight reconstruction of the invention. As advanced above, Mine et al. does not teach or suggest "line segment formation means for producing line segment image data representing a line segment which comprises a plurality of pixels for each of the plurality of processing units, the line segment formation means including means for setting a line segment length L, the line segment formation means being arranged and configured to form line segments having said length L." Consequently, there is no motivation in the prior art for modifying Mine et al. using Tsukasaki or any other teaching to add a capability of "setting a line segment of length 'L.'"

Applicant notes further that the explanation of motivation proposed in the Office Action finds no support in the prior art and, in fact, runs directly counter to the purpose and function of Mine et al. More specifically, the Office Action states as follows:

> ... it would have been obvious to one of ordinary skill in the art at the time of the invention to have modified the line segments disclosed by Mine according to the teachings of Tsukasaki to have a length of "L" because it will provide the capability of assigning a predetermined line segment length and limiting the length of the segment (i.e., edge length) to expedite edge detection process (Tsukasaki, Para.0026)."

As noted above, however, the *vector* magnitude calculated for the model image is used as a weight value for evaluation of the differences between the two images. The proposed benefit of "assigning a predetermined line segment length" and "limiting the length of the segment" to "expedite edge detection processing" is inapposite to the invention disclosed in Mine et al. Indeed, Mine et al. teaches directly away from "assigning a predetermined line segment length." Further, as noted above, assigning a vector magnitude would render Mine et al. inoperable for its intended function of producing a similarity value.

Even if proper motivation to combine Mine et al. and Tsukasaki could be found in the prior art, which it cannot, the result would still be deficient. For example, the combination would fail to provide "line segment formation means for producing line segment image data representing a line segment which comprises a plurality of pixels for each of the plurality of processing units, the line segment formation means including means for setting a line segment length L, the line segment formation means being arranged and configured to form line segments having said length L." The proposed combination also would be deficient in "line segment image storage means for storing the line segment image data produced by said line segment formation means."

Claim 1 is patentable over Mine et al. in view of Tsukasaki. Claims 2-3, 5, 7-9, 11, 12, 19-22, 28-34, 48-49, 51-52, and 56-60 depend from claim 1 and so are patentable over Mine et al. in view of Tsukasaki.for at least the same reasons.

Claim 28 recites an image processing apparatus comprising, *inter alia*, "an image processing means for calculating at least the direction of the level gradient of each of a plurality of processing units in given image data, and producing line segment data representing a line segment which comprises a plurality of pixels for each of the plurality of processing units, said image processing means including means for predetermining a line segment length L, the image processing means being arranged and configured to form line segments having said predetermined length L," and "display means for displaying the line segment images represented by the line segment image data produced by said image processing means."

Arguments analogous to those advanced above with respect to claim 1 are applicable to claim 28. As noted above, Mine et al. discloses a system for comparing two images. Mine et al. does not teach or suggest "an image processing means for ... producing line segment data representing a line segment which comprises a plurality of pixels for each of the plurality of processing units." Mine et al. also does not teach or suggest an "image processing means including means for predetermining a line segment length L, the image processing means being arranged and configured to form line

segments having said predetermined length L." Besides being deficient in disclosing recited subject matter of claim 28, Mine et al. teaches away from subject matter recited in claim 28. For example, "predetermining a line segment length L" is completely contrary to the operation of Mine et al., which utilizes a calculated *vector magnitude* as a weighting value in evaluating differences between edge directions in the two images being compared. The subject matter of claim 28 is not anticipated or rendered obvious by Mine et al.

Tsukasaki does not cure the deficiencies of Mine et al. Applicant respectfully submits that Tsukasaki can not properly modify Mine et al. to include "means for predetermining a line segment length L" because Mine et al. instead requires that a weighting value necessary to the comparison operation is calculated from the model image. The use of the calculated weighting value is central to the purpose Mine et al. invention of obtaining a similarity value.

Further, the motivation for combining Mine et al. and Tsukasaki as stated in the Office Action is not supported by the prior art and is contrary to the teachings of Mine et al. The Office Action states as follows:

> ... it would have been obvious to one of ordinary skill in the art at the time of the invention to display the line segments disclosed by Mine because it is a fundamental visualization process routinely implemented in computer graphics as a visual aid and is a matter of design choice."

Applicant respectfully disagrees, noting again that the Mine et al. apparatus produces a similarity value. "Fundamental visualization" processes are not suggested in Mine et al, since the inputted image, and the model image in particular, are known images. The two images are being compared according to Mine et al. to determine their similarities. Mine et al. does not produce "line segments" and further has no need to display or visualize "line segments."

Claim 28 is patentable over the proposed combination of Mine et al. and Tsukasaki. Claims 29-30 depend directly and indirectly, respectively, from claim 28 and so are patentable over Mine et al. in view of Tsukasaki for at least the same reasons.

Claim 31 recites an image processing method comprising, *inter alia*, "providing a predetermined line segment length," "producing line segment image data representing a line segment which comprises a plurality of pixels for each of the plurality of processing units, each line segment having said predetermined line segment length and a direction corresponding to the calculated direction of the level gradient for each pixel having a non-zero level gradient," and "storing the produced line segment image data in storage means."

Arguments analogous to those advanced above with respect to claims 1 and 28 are applicable to claim 31. As noted above, Mine et al. discloses a method for comparing two images to determine similarity value. Mine et al. does not teach or suggest a processing method that includes "providing a predetermined line segment length," "producing line segment image data representing a line segment which comprises a plurality of pixels for each of the plurality of processing units, each line segment having said predetermined line segment length and a direction corresponding to the calculated direction of the level gradient for each pixel having a non-zero level gradient," and "storing the produced line segment image data in storage means." Instead, Mine et al. obtains a weighting value calculated as a vector magnitude in its method of comparing two images. Mine et al. does not teach or suggest the subject matter of claim 31.

Tsukasaki does not cure the deficiencies of Mine et al. Tsukasaki is said in the Office Action to provide the missing feature of "setting a line segment of length L," yet Mine et al. calculates a vector magnitude to use as a weighting value when making comparisons between the model image and the inputted image. The vector magnitude is calculated for the model image. No useful purpose is apparent, nor has been set forth in the Office Action, for modifying Mine et al. based on Tsukasaki to provide a method that

includes "providing a predetermined line segment length." Claim 31 is patentable over the proposed combination of Mine et al. combined with Tsukasaki.

Claim 32 recites a medium storing a program for controlling a computer so as to, *inter alia*, "provide a predetermined line segment length," "produce line segment image data representing a line segment which comprises a plurality of pixels for each of the plurality of processing units, each line segment having said predetermined line segment length and a direction corresponding to the calculated direction of the level gradient for each pixel having a non-zero level gradient," and "store the produced line segment image data in storage means."

Arguments analogous to those advanced above with respect to claims 1, 28, and 31 are applicable to claim 32. Mine et al. discloses a process for comparing two images. Mine et al. does not teach or suggest a program for controlling a computer so as to, *inter alia*, "provide a predetermined line segment length," "produce line segment image data representing a line segment which comprises a plurality of pixels for each of the plurality of processing units, each line segment having said predetermined line segment length and a direction corresponding to the calculated direction of the level gradient for each pixel having a non-zero level gradient," and "store the produced line segment image data in storage means."

The Office Action admits that Mine et al. does not teach or suggest a program controlling a computer so as to, *inter alia*, "provide a predetermined line segment length." Tsukasaki does not cure the deficiencies of Mine et al. Tsukasaki has been cited as providing "setting a line segment of length 'L.'" Mine et al., however, calculates a vector magnitude of the model image to obtain a weighting value for evaluating differences between the model image and the inputted image. Modifying Mine et al. to accept "a predetermined line segment length" instead of calculating a vector magnitude would not provide a useful weighting value for evaluating differences in edge directions between the model image and the subject image. Claim 32 is patentable over the proposed combination of Mine et al. and Tsukasaki.

Claim 33 recites an image processing method comprising, *inter alia*, "providing a predetermined line segment length," "producing line segment image data representing a line segment which comprises a plurality of pixels for each of the plurality of processing units, each line segment having said predetermined line segment length and a direction corresponding to the calculated direction of the level gradient for each image data having a non-zero level gradient," and "displaying line segment images represented by the produced line segment image data on a display device."

Arguments analogous to those advanced above with respect to claims 1, 28, 31, and 32 are applicable to claim 33. Mine et al. discloses a process for comparing two images and determining a similarity. Mine et al. does not teach or suggest an image processing method comprising, *inter alia*, "providing a predetermined line segment length," "producing line segment image data representing a line segment which comprises a plurality of pixels for each of the plurality of processing units, each line segment having said predetermined line segment length and a direction corresponding to the calculated direction of the level gradient for each image data having a non-zero level gradient," and "displaying line segment images represented by the produced line segment image data on a display device."

Tsukasaki does not cure the deficiencies of Mine et al. Tsukasaki discloses a closed area distracting method, and has been cited as providing "setting a line segment of length L." As noted above, there is no need to set a line segment or a line segment length in Mine et al. Mine et al. compares two images based on a difference in edge directions, weighted by a vector magnitude calculated for the model image to which the inputted image is being compared. The prior art lacks the motivation to modify Mine et al. to include "setting a line segment length." Further, replacing the feature of calculating a vector magnitude in Mine et al. with "setting a line segment length" would render Mine et al. useless for its intended purpose. The subject matter of claim 33 is not anticipated or rendered obvious by the proposed combination of Mine et al. and Tsukasaki.

Claim 34 recites a medium storing a program for controlling a computer so as to, *inter alia*, "provide a predetermined line segment length," "produce line segment image data representing a line segment which comprises a plurality of pixels for each of the plurality of processing units, each line segment having said predetermined line segment length and a direction corresponding to the calculated direction of the level gradient for each processing unit having a non-zero level gradient," and "display line segment images represented by the produced line segment image data on a display device."

Arguments analogous to those advanced above with respect to claims 1, 28, 31, 32, and 33 are applicable to claim 34. Mine et al. teaches a process for comparing two known images based on a difference in edge direction using a weighting value obtained by calculating a vector magnitude of the model image. Mine et al. does not disclose a program that controls a computer to "provide a predetermined line segment length," as is admitted in the Office Action. Modifying the Mine et al process to "provide a predetermined line segment length," as allegedly disclosed by Tsukasaki, would serve no useful purpose in Mine et al. Indeed, Mine et al. would no longer function as intended if modified to replace the step of calculating a vector magnitude with one that would "provide a predetermined line segment length." Claim 34 is patentable over Mine et al. combined with Tsukasaki.

Claim 48 recites an image processing apparatus comprising, *inter alia*, "a line segment length provider which provides a line segment length," "a line segment former which produces line segment image data representing a line segment which comprises a plurality of pixels having said line segment length and a direction corresponding to the direction of the level gradient which is calculated by said gradient calculation means," and "line segment image storage which stores the line segment image data produced by said line segment formation means."

Arguments analogous to those advanced above with respect to claims 1, 28, and 31-34 are applicable to claim 48. Mine et al. discloses an image processing apparatus used to compare two images. The differences in edge directions are compared based on a

weighting value derived from a vector magnitude calculated for the model image. Mine et al. does not teach or suggest "a line segment length provider which provides a line segment length," and "a line segment former which produces line segment image data representing a line segment which comprises a plurality of pixels having said line segment length and a direction corresponding to the direction of the level gradient which is calculated by said gradient calculation means." As a further consequence, Mine et al. does not teach or suggest "line segment image storage which stores the line segment image data produced by said line segment formation means."

Tsukasaki does not cure the deficiencies of Mine et al. Tsukasaki discloses a closed-area extracting device, and is alleged to provide "setting a line segment of length 'L.'" Even if Tsukasaki provided the necessary disclosure and the proper motivation were found, which they can not, a "line segment length provider which provides a line segment length" serves no purpose in Mine et al. Further, modifying Mine et al. to replace a calculated vector magnitude with a "line segment length provider which provides a line segment length" would obviate the weighting value necessary for the intended functioning of Mine et al. Claim 48 is patentable over the proposed combination of Mine et al. in view of Tsukasaki.

Claim 56 recites an image processing apparatus comprising, *inter alia*, "line segment formation means for producing line segment image data representing a line segment which comprises a plurality of pixels for each of the plurality of processing units, the line segment formation means being arranged and configured to form line segments each having a respective given length L, and a direction corresponding respectively to the direction of each level gradient which is calculated by said gradient calculation means," "means for varying the given length L prior to forming said line segments," and "line segment image storage means for storing the line segment image data produced by said line segment formation means."

Arguments analogous to those advanced above with respect to claims 1, 28, 31-34, and 48 are applicable to claim 56. Mine et al. *calculates* a vector magnitude for each

pixel of a model image. These vector magnitudes are used as weighting values for evaluating differences between edge directions of the model image and an inputted image. Mine et al. does not anticipate or render obvious the subject matter recited in claim 56. Modifying Mine et al. using Tsukasaki to "form line segments each having a respective given length L" would not result in the invention recited in claim 56. Further, in addition to the fact that line segments and vectors are not equivalent, if somehow the vectors of Mine et al. could be provided with a "given length L," each of the vectors would have the same weighting value. Mine et al. would not function as the intended image processing apparatus for comparing two images. Claim 56 is patentable over the proposed combination of Mine et al. and Tsukasaki.

Claim 57 recites image processing apparatus comprising, *inter alia*, "line segment formation means for producing line segment image data representing a line segment which comprises a plurality of pixels for each of the plurality of processing units, each line segment having a given length and a direction corresponding respectively to the direction of each level gradient which is calculated by said gradient calculation means," and "line segment image storage means arranged and configured to store, for each respective pixel through which the line segment passes, the line segment image data produced by said line segment formation means at said respective pixel."

Arguments analogous to those advanced above with respect to claims 1, 28, 31-34, 48, and 56 are applicable to claim 57. Mine et al. discloses an image comparison apparatus in which a calculated vector magnitude is used as a weighting value for comparison of two images. Mine et al. does not teach or suggest "line segment formation means for producing line segment image data representing a line segment which comprises a plurality of pixels for each of the plurality of processing units, each line segment having a given length," and "line segment image storage means arranged and configured to store, for each respective pixel through which the line segment passes, the line segment image data produced by said line segment formation means at said respective pixel." There is no reason to modify Mine et al. to provide "line segment formation means for producing line

segment image data representing a line segment which comprises a plurality of pixels for each of the plurality of processing units, each line segment having a given length." Assigning a given length to each line segment, as allegedly disclosed by Tsukasaki, would eliminate the weighting-value used in Mine et al. in making line segment comparisons. Claim 57 is patentable over the proposed combination of Mine et al. in view of Tsukasaki. Claim 58 depends directly from claim 57 and is patentable over Mine et al. in view of Tsukasaki for at least the same reasons.

Claim 59 recites an apparatus configured and arranged to perform a plurality of types of image processing, including various types of image detection and image recognition. The apparatus comprises, *inter alia*, "line segment formation means for producing line segment image data representing a line segment which comprises a plurality of pixels for each of the plurality of processing units, each line segment having a given length," "means for setting a line segment length associated with a type of image processing selected," and "line segment image storage means for storing the line segment image data produced by said line segment formation means."

Arguments analogous to those advanced above with respect to claims 1, 28, 31-34, 48, and 56-57 are applicable to claim 59. Mine et al. discloses an image-comparison apparatus. Two images are compared: one is the model and the other is the subject. The edge directions of each figure are compared. A weighting value is provided by calculation of a vector magnitude for the model image. A similarity value is obtained. Mine et al. does not teach or suggest "means for setting a line segment length associated with a type of image processing selected" and "line segment image storage means for storing the line segment image data produced by said line segment formation means." Tsukasaki does not cure the deficiencies of Mine et al. Modifying Mine et al. to set a line segment length, as allegedly disclosed by Tsukasaki, would eliminate the weighting-value used in Mine et al. in making image similarity comparisons. Claim 59 is patentable over Mine et al. in view of Tsukasaki. Claim 60 depends directly from claim 59 and is patentable over Mine et al. in view of Tsukasaki for at least the same reasons.

Claims 16, 23, 26-27, 35-41, 50, and 53-55 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Mine et al. in view of Tsukasaki and U.S. Pat. No. 5,903,660 to Huang et al. Applicant respectfully requests reconsideration of this rejection.

Claims 16, 23, 26-27, and 50 depend directly or indirectly from claim 1. Claim 1 is patentable over Mine et al. in view of Tsukasaki, as advanced above. Accordingly, claims 16, 23, and 26-27 also are patentable over the proposed combination of Mine et al. and Tsukasaki. Huang et al. does not cure the deficiencies of Mine et al. in view of Tsukasaki. Huang et al. has been cited as providing detection of the presence of a point of intersection of a plurality of line segments. Huang et al. does not provide, however, the missing teachings of "a line segment formation means for producing line segment image data representing a line segment which comprises a plurality of pixels for each of the plurality of processing units, the line segment formation means including means for setting a line segment length L, the line segment formation means being arranged and configured to form line segments having said length L, and a direction corresponding to the direction of each level gradient which is calculated by said gradient calculation means," and "line segment image storage means for storing the line segment image data produced by said line segment formation means." As noted above, "setting a line segment length L" is contrary to the purpose of Mine et al. Huang et al. does not, and can not, provide a reason to modify Mine et al. to operate in a manner contrary to its intended purpose. Claim 1 is patentable over Mine et al. in view of Tsukasaki and Huang et al. Claims 16, 23, 26-27, and 50 depend from claim 1 and so are patentable over Mine et al. in view of Tsukasaki and Huang et al. for a least the same reasons.

Claim 35 recites an image processing apparatus comprising, *inter alia*, "means for providing a predetermined line segment length," "means for setting, for each of the edges, a line segment which comprises a plurality of pixels extending said predetermined length in a direction corresponding to the direction of the extracted edge," and "means for detecting the presence or absence of a point of intersection of a plurality of line segments and the position thereof."

Arguments analogous to those advanced above with respect to claims 1, 28, 31-34, 48, 56-57, and 59 are applicable to claim 35. Mine et al. discloses an image processing apparatus that compares a model image and an inputted image. The comparison is based on a difference between edge directions. The edge-direction differences are evaluated using a weighting value obtained by calculating a vector magnitude for the model image. Setting a line segment having a "predetermined length" for each of the edges admittedly is missing from Mine et al. Further, using line segments, particularly line segments having a "predetermined length," would serve no purpose in Mine et al., and in fact would be counter to the teachings of Mine et al. Thus, Tsukasaki does not combine with Mine et al. to provide the subject matter of claim 35. Huang et al. does not cure the deficiencies of Mine et al. and Tsukasaki. Huang et al. has been cited as providing detection of the presence of a point of intersection of a plurality of line segments. Huang et al. does not combine with Mine et al. and Tsukasaki to provide the missing subject matter and motivation. Claim 35 is patentable over Mine et al. in view of Tsukasaki and Huang et al. Claim 36 depends from claim 35, and is patentable over Mine et al. in view of Tsukasaki and Huang et al. for at least the same reasons.

Claim 37 recites an inspection apparatus comprising, *inter alia*, "means for specifying a line segment length," "means for calculating at least the direction of the level gradient of each of a plurality of processing units in said input image data, and producing line segment image data representing a line segment which comprises a plurality of pixels for each of the plurality of processing units, each line segment having said specified line segment length and a direction corresponding to the calculated direction of the level gradient," and "means for detecting the presence or absence of a portion where the line segments are concentrated or are overlapped with one another and the position thereof on the basis of the produced line segment image data."

Arguments analogous to those advanced above with respect to claims 1, 28, 31-35, 48, 56-57, and 59 are applicable to claim 37. Mine et al. discloses an apparatus for comparing a model image and an inputted image. Mine et al. does not teach or suggest an

inspection apparatus with "means for specifying a line segment length," "means for ... producing line segment image data representing a line segment which comprises a plurality of pixels" for each of a plurality of processing units, "each line segment having said specified line segment length," and "means for detecting the presence or absence of a portion where the line segments are concentrated or are overlapped with one another and the position thereof on the basis of the produced line segment image data." Claim 37 is not anticipated or rendered obvious by Mine et al.

Tsukasaki does not cure the deficiencies of Mine et al. Line segments, particularly line segments having a "predetermined length," would serve no purpose in Mine et al., and in fact would be counter to the teachings of Mine et al. Huang et al. does not cure the deficiencies of Mine et al. and Tsukasaki. Huang et al. has been cited as providing detection of the presence of a point of intersection of a plurality of line segments. Huang et al. does not combine with Mine et al. and Tsukasaki to provide the missing subject matter and motivation. Claim 37 is patentable over Mine et al. in view of Tsukasaki and Huang et al. Claims 38-41 and 54-55 depend directly or indirectly from claim 37, and are patentable over Mine et al. in view of Tsukasaki and Huang et al. for at least the same reasons.

Claim 53 depends from claim 31. Claim 31 is patentable over the proposed combination of Mine et al. in view of Tsukasaki, as advanced above. Claim 53, being dependent on claim 31, is patentable over Mine et al. in view of Tsukasaki. Huang et al. does not cure the deficiencies of Mine et al. in view of Tsukasaki. Huang et al. has been cited as providing detection of the presence of a point of intersection of a plurality of line segments. Huang et al. does not combine to provide the subject matter and motivation missing from Mine et al. and Tsukasaki. Claim 31 is patentable over Mine et al. in view of Tsukasaki and Huang et al. Claim 53 depends indirectly from claim 31, and is patentable over Mine et al. in view of Tsukasaki and Huang et al. for at least the same reasons.

Claims 4 and 10 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Mine et al. in view of Tsukasaki, further in view of U.S. Pat. No. 6,292,582 to Lin et al. Applicant respectfully requests reconsideration of this rejection.

Claims 4 and 10 depend indirectly and directly, respectively, from claim 1. Claim 1 is patentable over Mine et al. in view of Tsukasaki as advanced above. Dependent claims 4 and 10 are patentable over Mine et al. in view of Tsukasaki for at least the same reasons. Lin et al. does not cure the deficiencies of Mine et al. in view of Tsukasaki. Lin et al. has been cited as providing a means for setting a processing region. Lin et al. does not provide the subject matter and motivation missing from Mine et al. in view of Tsukasaki with respect to claim 1. Claim 1 is patentable over the proposed combination of Mine et al. in view of Tsukasaki and Lin et al. Claims 4 and 10 depend from claim 1 and so are patentable over the proposed combination of Mine et al. in view of Tsukasaki and Lin et al. for at least the same reasons.

Claims 13-15 and 59[3] stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Mine et al. in view of Tsukasaki, further in view of U.S. Pat. No. 5,898,440 to Tachibana. Applicant respectfully requests reconsideration of this rejection.

Claims 13-15 depend directly or indirectly from claim 1. Claim 1 is patentable over the proposed combination of Mine et al. in view of Tsukasaki. Dependent claim 13-15 are patentable over Mine et al. in view of Tsukasaki for at least the same reasons. Tachibana does not cure the deficiencies of Mine et al. in view of Tsukasaki. Tachibana has been cited as producing a line segment with given parameters. Tachibana does not provide the subject matter and motivation missing from Mine et al. in view of Tsukasaki with respect to claim 1. Claim 1 is patentable over the proposed combination of Mine et al. in view of Tsukasaki and Tachibana. Claims 13-15 depend from claim 1 and so are patentable over the proposed combination of Mine et al. in view of Tsukasaki and Tachibana for at least the same reasons.

[3] The applicability of this rejection to claim 59 is not detailed in section 8 of the outstanding Office Action and is not understood by Applicant.

Claim 59 is patentable over the proposed combination of Mine et al. in view of Tsukasaki as advanced above. Tachibana, cited as producing a line segment with given parameters, does not cure the deficiencies of Mine et al. in view of Tsukasaki. Claim 59 is patentable over the proposed combination of Mine et al. in view of Tsukasaki, further in view of Tachibana.

Claims 17-18 and 24-25 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Mine et al. in view of Tsukasaki, further in view of U.S. Pat. No. 5,926,557 to King et al. Applicant respectfully requests reconsideration of this rejection.

Claims 17-18 and 24-25 depend directly or indirectly from claim 1. Claim 1 is patentable over the proposed combination of Mine et al. in view of Tsukasaki. Dependent claims 17-18 and 24-25 are patentable over Mine et al. in view of Tsukasaki for at least the same reasons. King et al. does not cure the deficiencies of Mine et al. in view of Tsukasaki. King et al. has been cited as providing a means for detecting a pixel having the maximum gradient. King et al. does not provide the subject matter and motivation missing from Mine et al. in view of Tsukasaki with respect to claim 1. Claim 1 is patentable over the proposed combination of Mine et al. in view of Tsukasaki and King et al. Claims 17-18 and 24-25 depend from claim 1 and so are patentable over the proposed combination of Mine et al. in view of Tsukasaki and King et al. for at least the same reasons.

Claim 6 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over Mine et al. in view of Tsukasaki, further in view of U.S. Pat. No. 6,427,030 to Williams et al. Applicant respectfully requests reconsideration of this rejection.

Claim 6 depends directly from claim 1. Claim 1 is patentable over the proposed combination of Mine et al. in view of Tsukasaki. Dependent claim 6 is patentable over Mine et al. in view of Tsukasaki for at least the same reasons. Williams et al. does not cure the deficiencies of Mine et al. in view of Tsukasaki. Williams et al. has been cited as teaching that it is known to convert gray level pixel image data to binary level pixel image data. Williams et al. does not provide the subject matter and motivation missing from

Mine et al. in view of Tsukasaki with respect to claim 1. Claim 1 is patentable over the proposed combination of Mine et al. in view of Tsukasaki and Williams et al. Claim 6 depends from claim 1 and so is patentable over the proposed combination of Mine et al. in view of Tsukasaki and Williams et al. for at least the same reasons.

Claim 42 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over Mine et al. in view of Tsukasaki and Huang et al., further in view of Tachibana. Applicant respectfully requests reconsideration of this rejection.

Claim 42 depends directly from claim 37. Claim 37 is patentable over Mine et al. in view of Tsukasaki and Huang et al. as advanced above. Dependent claim 42 is patentable over Mine et al. in view of Tsukasaki and Huang et al. for at least the same reasons. Tachibana does not cure the deficiencies of Mine et al. in view of Tsukasaki and Huang et al. Tachibana has been cited as producing a line segment with given parameters. Tachibana does not provide the subject matter and motivation missing from Mine et al. in view of Tsukasaki and Huang et al. with respect to claim 37. Claim 37 is patentable over the proposed combination of Mine et al. in view of Tsukasaki and Huang et al., further in view of Tachibana. Claim 42 depends from claim 37 and so is patentable over the proposed combination of Mine et al. in view of Tsukasaki and Huang et al., further in view of Tachibana, for at least the same reasons.

In view of the above amendment, applicant believes the pending application is in condition for allowance.

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Respectfully submitted,

By _____
Thomas J. D'Amico
Registration No.: 28,371
Peter McGee
Registration No.: 35,947
DICKSTEIN SHAPIRO MORIN &
OSHINSKY LLP

2101 L Street NW
Washington, DC 20037-1526
(202) 785-9700
Attorneys for Applicant